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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 15

Application Number: 09/434,913
Filing Date: November 05, 1999
Appellant(s): MECHERLE ET AL.

David M. Morse
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/4/03.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 21, 22, and 26 stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,054,794 LAUGHLIN 10-1977

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mearns (U.S. Patent No. 5,969,860).

Regarding Claims 21 and 26, Mearns teaches an optical system comprising an aperture (reference numeral H in Figure 1); a Mangin mirror in line with the aperture (reference numeral E in Figure 1); a detector system at the focal point of the Mangin mirror (reference numeral G in Figure 1); Mearns differs from the claimed invention in that Mearns fails to specifically teach a transceiver and a photodiode at the focal point of the Mangin mirror or an output from the photodiode. However, it is clear that since the system of Mearns is a receiver of optical signals, the detector G of the system inherently comprises a photodetector for the detection of the optical signals from which electrical signals are output. Furthermore, it is well known in the art to detect optical signals via a photodiode, then output an electrical equivalent of the detected optical signal. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have included a photodiode within the detector assembly G of Mearns with an output to output an electrical equivalent of the detected optical signal.

In regard to the recitation of a "portable transceiver" in the preamble, this recitation has not been given any weight since the body of the claim does not depend on the preamble for completeness. In re Hirao 532F.2d 67 190USPQ 15 (CCPA 1976) and Kopra v,. Robie 187 F.2d 150, 152, USPQ 478, 481 (CCPA 1951).

Absent any teaching of criticality, it would have been a matter of design choice or given the general environment of the prior art it would have been obvious to obtain an optimal value by routine experimentation. Therefore, an f-number of about 0.67 would have been attainable for one skilled in the art.

2. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mearns in view of Laughlin.

Regarding Claim 22, Mearns differs from the claimed invention in that Mearns fails to specifically teach a preamplifier coupled with the photodiode; an automatic gain control coupled with the preamplifier and with the output. However, one skilled in the art would clearly have recognized that since the optical have traveled through free-space they are susceptible to interference and have thereby been reduced in power. One skilled in the art would have recognized that a method to remedy this is through amplification of the received via an automatic gain controlled pre-amplifier. Laughlin, in the same field of endeavor, teaches that it is well known in the art to pre-amplify a received signal via an automatic gain controlled pre-amplifier to counteract the effects of free-space optical transmission on an optical signal (column 4 lines 9-12).

(11) Response to Argument

The applicant argues that Mearns does not teach the limitations of claim 21 and contends that Mearns fails to specifically teach a Mangin mirror having a focal point and a photodiode disposed at the focal point of the Mangin mirror. However, the examiner disagrees.

Figures 1 and 2 of Mearns clearly show a Mangin mirror (reference letter E) reflecting light rays of an intermediate image (reference numeral 10 and generally reference letter H) so that the light rays that compose the image converge upon points of a focal plane (12), thereby transferring the intermediate image (10) onto the focal plane (12). The focal plane is formed on the surface of an optical detector system within a detector housing (reference letter G). In reviewing the Figures of Mearns, it is important to keep in mind that the convergence points that form the intermediate image (10) on the focal plane (12) are much like stars in the night sky that form a constellation, e.g. points of light which, when observed as a whole, form an image. The examiner has concluded that the convergence points on the focal plane (12) are points which, when observed as a whole, form an image at the focal point of the Mangin mirror, hence Mearns' disclosure of a "focal" plane. This conclusion is supported by Merriam Webster's Collegiate Dictionary that defines a focal point as a focus, and further defines a focus as, "a point at which rays (as of light, heat, or sound) converge or from which they diverge." In Mearns, it is clear that the rays of light converge at the focal plane to form the intermediate image. Merriam Webster's Collegiate Dictionary further defines a focal point as a focus where, "the point where the geometrical lines or their prolongations conforming to the rays diverging from or converging toward another point intersect and *give rise to an image after reflection by a mirror* or refraction by a lens or optical system." In Mearns, the convergence points intersect at the focal plane (12)

and *give rise to the intermediate image* (10) *after reflection by the Mangin mirror* (E). In a broader context, Merriam Webster's Collegiate Dictionary defines a focal plane as, "a plane that is perpendicular to the axis of a lens or mirror and passes through the focus." In Mearns' Figure 1 and Figure 2, the focal plane (12) is clearly shown as being perpendicular to the axis (21) of the Mangin mirror (E). With a focal point being defined as a focus, it is clear that the focal plane by definition passes through the focal point of the Mangin mirror.

A more technology-specific reference, the Communications Standard Dictionary, similarly defines a focal plane as, "a plane through the focal point perpendicular to the principal axis of the system, such as a lens or mirror." As seen in the figures, the plane (12) is perpendicular to the axis (21) of the Mangin mirror (E), and therefore the plane passes through the focal point of the Mangin mirror. Furthermore, the Communications Standard Dictionary defines a focal point as, "the point at which a bundle of rays form a sharp image of an object." As previously discussed, the intermediate image (10) is formed on the focal plane (12) by a bundle of rays (H). Moreover, the Communications Standard Dictionary states that the term "focal point" is synonymous with "principal focus point" which is defined as, "the point to which incident parallel rays of light converge, or from which they diverge, when they have been acted upon by a lens or mirror," a definition clearly met by the figures. More importantly, this dictionary provides that, "A lens or mirror has an infinite number of image points, real or virtual, one for each position of, or point on, the object." Therefore, although the Mearns' figures show a plurality of discrete points on the focal plane, these discrete points are the image points of the intermediate image, and they make up the overall intermediate image focused onto the focal plane at the focal point of the Mangin mirror.

In light of the discussions above and contrary to the applicant's assertions, it is clear that the Mangin mirror according to various definitions has a focal point. Furthermore, the applicant's claim fails to recite any language that would limit the shape of the Mangin mirror to a non-planar shape. Instead, the applicant broadly claims a Mangin mirror and a photodiode at the focal point of the Mangin mirror. Mearns clearly teaches a Mangin mirror (E) and further teaches an optical detection system (G) with an optical detector whose surface (12) is at the focal plane, and by definition, the focal point of the Mangin mirror. Though the applicant implies that a curved non-planar mirror would be required in order to form a focal point, a curved non-planar mirror is not claimed. Moreover, the applicant's contention that a planar mirror inherently has no focal point is completely wrong. In fact, the focal point of a planar mirror, when parallel light beams are incident upon it, lies at infinity. Therefore, though the focal point of a planar mirror is hard to define, one does exist. On the contrary, the Mangin mirror of Mearns, though planar, has light rays incident upon it that are not parallel, thereby allowing a finite focal point to be formed at the focal plane.

Mearns, in disclosing the focal plane (column 2 lines 4-6), teaches that this focal plane is formed on the surface of an optical detector system which the examiner contends is obviously a photodetector of some sort with a well-known photodiode being most likely. As discussed above, the focal plane contains the focal point of the Mangin mirror. Therefore, the optical detector system inherently comprising a photodiode is disposed at the focal point of the Mangin mirror. This is supported by the arguments and definitions above. Furthermore, though the applicant's assertion that the focal point of the Mangin mirror could lie anywhere outside the focal plane of the optical system may be true, the figures clearly show the opposite. According

to MPEP 2125, "it does not matter that the feature shown is unintended or unexplained in the specification." In this case, the figures clearly show a convergence of light rays towards the focal plane where the reflected intermediate image is formed at the focal point of the Mangin mirror.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Agustin Bello
Examiner
Art Unit 2633

AB
March 22, 2004

Conferees
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